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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/779,256	02/07/2001	Behrooz Rezvani	VELCP006C	1433
28436	7590	02/12/2004	EXAMINER	
IP CREATORS P. O. BOX 2789 CUPERTINO, CA 95015			AHN, SAM K	
			ART UNIT	PAPER NUMBER
			2634	

DATE MAILED: 02/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/779,256

Applicant(s)

REZVANI ET AL.

Examiner

Sam K. Ahn

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on pre-amendment, 1/9/02.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6-9,11,12,14-17,19 and 20 is/are rejected.
- 7) ☒ Claim(s) 5,10,13,18 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because the lines interconnecting blocks such as (300, 260, 258, 266, 262, 318 and 322) in Fig.3A~3C do not clearly illustrate the flow of signal path. On the other hand, for example, 304 in Fig.3A clearly shows the direction of the signal flow. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 1 and 3-21 are objected to because of the following informalities:

In claim 1, line 2, delete "--- receive path ---" and insert "--- the receive path ---".

In claim 1, line 12, delete "--- at least control parameter ---" and insert "--- at least one control parameter ---".

In claims 1, 11, line 13, 3, respectively, delete "--- receive path ---" and insert " --- the receive path ---".

In claim 7, line 3, delete "--- ACD ---" and insert "--- ADC ---".

In claims 1, 11 and 19, lines 5, respectively, delete "--- transmission path ---" and insert "--- transmit path ---".

Claims 3-6, 8-10, 12-18 and 20-21 directly depend on claims 1, 11 or 19.

The Office suggests the changes as explained above to improve clarity of the claim language. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3, 4, 6, 8, 11, 12, 14, 16, 19 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by McMeekin (McMeekin).

Regarding claims 1, 11 and 19, McMeekin teaches a communication device, a method and means for configuring an output of a communication device (see Fig.1) with a transmit path (forward channel) and a receive path (reverse channel) coupled to a communication medium and with the transmit path and the receive path including transmit components (100) and receive components (RCVR) respectively, and the communication device comprising a training module (130) for transmitting on the transmit path a training sequence (pilot tones) which generates a monitor signal (pilot tones P'') on the receive path. McMeekin further teaches a controller (120) for controlling variations of at least

one control parameter of at least a selected one of the transmit components (231,232, 233) during the transmission of the training sequence by the training module; a tone detector (112) on the receive path to detect levels of the monitor signal, and a processor (110) which utilizes the detected levels of the monitor signal to determine which among the variations of the at least one control parameter minimizes leakage between the transmit path and the received path. (note col.5, line 66 – col.6, line 35) And further, utilizing the level of the at least one control parameter determined in said determining act during subsequent transmissions. (note col.4, lines 5-8)

Regarding claim 3, McMeekin teaches all subject matter claimed, as applied to claim 1. McMeekin further teaches with the controller further for controlling the locking of the at least one control parameter (wherein it is inherent that the digital filters, 231-233 implements different control parameters to predistort the pilot tones) at the level determined by the processor to minimize leakage or distortion during subsequent operation of the communication device. (note col.6, lines 16-35)

Regarding claim 4, 12 and 20, McMeekin teaches all subject matter claimed, as applied to claim 1, 11 or 19. McMeekin further teaches a plurality of tone sets an intermodulation (note col.2, lines 64 –67) of which generates monitor signal (pilot tones P”) on the receive path.

Regarding claims 6 and 14, McMeekin teaches all subject matter claimed, as applied to claim 1 or 11. McMeekin further teaches wherein the controller controls variations of an input voltage (see undistorted and distorted pilot tones in Fig.4) of a selected amplification component (100 in Fig.4, where it is inherent that an RF transmitter comprises an amplification component) within the transmit path of the communication device. The power of the pilot tones have been distorted, wherein the power of the tones is inherently related to the input voltage of the tones, since power is voltage times the current. In order to modify the power, one skilled in the art may do so by changing the input voltage. Therefore, it is inherent that the distorted pilot tones are modified by changing the input voltage during the amplification stage within the RF transmitter.

Regarding claims 8 and 16, McMeekin teaches all subject matter claimed, as applied to claim 1 or 11. McMeekin further teaches wherein the communication device comprises a wireless medium (note col.3, lines 25-47) and further teaches wherein the device may be applied to a wired medium. (note col.4, lines 14-21)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2634

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMeekin (McMeekin).

Regarding claims 9 and 17, McMeekin teaches all subject matter claimed, as applied to claim 1 or 11. However, McMeekin does not teach wherein the communication device comprises a physical modem. McMeekin do, on the other hand, teach wherein the system may be employed in a non-wireless or wired communication system. Therefore, it would have been obvious to one skilled in the art at the time of the invention to implement McMeekin's teaching in the communication device comprising a physical modem for the purpose of taking advantages McMeekin's system offers wherein the bandwidth is limited compared to the needs.

5. Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMeekin (McMeekin) in view of Lagerblom et al. (Lagerblom).

Regarding claims 7 and 15, McMeekin teaches all subject matter claimed, as applied to claims 1 or 11. McMeekin teaches a receiver, (see RCVR in Fig.1) coupled to the receive path. However, McMeekin does not explicitly disclose wherein an ADC is coupled to the receive path for digitizing the monitor signal (P''), the tone detector (112) coupled to the ADC for detecting an amplitude of the

monitor signal, although it also would have been inherent since the signals out of the RCVR are calculated digitally, and a memory for storage by the processor of the amplitude of the monitor signal and variations of the at least one control parameter corresponding thereto. Lagerblom teaches predistortion of a measuring signal and determining distortions through the received feedback signal. (note col.2, line 31 – col.3, line 27) Lagerblom further teaches (see Fig.1) wherein an ADC (14) is coupled to the receive path for digitizing the monitor signal (feedback signal), the tone detector (15) coupled to the ADC for detecting an amplitude of the monitor signal and a memory (16A, 16B) for storage by the processor (17) of the amplitude of the monitor signal and variations of the at least one control parameter corresponding thereto. (note col.5, line 31 – col.6, line 50) Therefore, although McMeekin does not explicitly disclose all the elements, it would have been obvious to one skilled in the art at the time of the invention to implement Lagerblom's teaching in McMeekin's teaching wherein the RCVR includes an ADC, the memory of McMeekin's includes the amplitude of the monitor signal for the purpose of updating the memory contents rather than going through an algorithm wherein the result may be a more effective calculation of predistortion values.

Allowable Subject Matter

6. Claims 5, 10, 13, 18 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. The following is a statement of reasons for the indication of allowable subject matter:
Present application discloses a predistortion in a transceiver transmitting a training sequence to determine the control parameters and effectively changing the values to vary the transmitting components, thus reduce distortions. Closest prior arts, McMeekin and Lagerblom teach all subject matter claimed. However, prior arts do not teach or in combination suggest the teaching wherein the monitor signal received after transmitting the training sequence comprises a single tone within an upstream set of dsl tones, as shown in Fig.4B. Further, prior arts do not teach a leakage model and inverse channel model for predistorting signals.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Timm et al. teach generation of training sequence for predistortion.

Bingham teaches predistortion to reduce RF interference.

Hamdi teaches profiles for digital modems that determines characteristics of a channel line.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Sam Ahn** whose telephone number is **(703) 305-0754**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Stephen Chin**, can be reached at **(703) 305-4714**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
P.O. Box 1450
Alexandria, VA 22313-1450

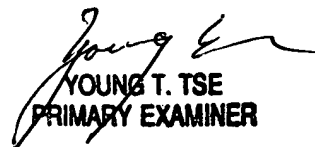
or faxed to:

(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Sam K. Ahn
2/5/04


YOUNG T. TSE
PRIMARY EXAMINER